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ABSTRACT

This annotated bibliography lists and describes nearly 50 key national data sources and reports on high school student preparation for college and work. Items were selected because they represent comprehensive research and analyses on high school and college student achievement and the skills and competencies needed for success in postsecondary education and the workplace. Section 1 describes six key primary national data sources: the American College Testing Program; the College Board; the Cooperative Institutional Research Program; the National Assessment of Educational Progress; the National Center for Education Statistics' Longitudinal Studies; and the National Center on Postsecondary Teaching, Learning, and Assessment. Section 2, on student preparation for college, addresses many facets of student college preparation in data-based reports and reports based on data sources from the first section. Section 3 summarizes some of the literature on increasing college costs and criticism of the quality of undergraduate education. Section 4 summarizes publications on student preparation for the workplace. Each section's citations are listed chronologically. Each citation provides information on title, publisher, date, description of the research or publication, and its key findings. (JB)

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AN ANNOTATED BIBLIOGRAPHY on STUDENT PREPARATION FOR COLLEGE & AND THE WORKPLACE

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AN ANNOTATED BIBLIOGRAPHY ON STUDENT PREPARATION FOR COLLEGE AND THE WORKPLACE

Alene Bycer Russell
Melodie E. Christal
Sheila Arredondo

September 1995

SHEEO

A joint publication of the State Higher Education Executive Officers and the Education Commission of the States.

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The Education Commission of the States is a nonprofit, nationwide interstate compact formed in 1965. The primary purpose of the commission is to help governors, state legislators, state education officials and others develop policies to improve the quality of education at all levels. Forty-nine states, the District of Columbia, American Samoa, Puerto Rico and the Virgin Islands are members.

The State Higher Education Executive Officers is a nonprofit, nationwide association of the chief executive officers serving statewide coordinating boards and governing boards of postsecondary education. Forty-nine states, the District of Columbia and Puerto Rico are members.

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Foreword

During the summer of 1994, the State Higher Education Executive Officers (SHEEO) and the Education Commission of the States (ECS) began a collaborative effort to develop a national meeting aimed at strengthening student preparation for college and the workplace. The audience for the meeting would be state leaders who were responsible for making education policy decisions. The meeting would be informed by national and state education leaders and researchers who would focus on three areas of transition for students: high school preparation and graduation, college admission and completion, and workforce preparation.

"The National Forum on Student Preparation for College and the Workplace" took place in Denver, Colorado, in May 1995, and was co-sponsored by SHEEO, ECS, American College Testing (ACT), the Educational Testing Service (ETS) and The College Board. To supplement and support the information sharing that took place at the National Forum, SHEEO and ECS are developing a series of publications related to the current knowledge about student preparation for college and work, and to state policy strategies aimed at ensuring the success of students as they make transitions from high school to college to the workforce. *An Annotated Bibliography on Student Preparation for College and the Workplace* represents the first of these published works.

This annotated bibliography lists and describes nearly 50 key national data sources and reports on student preparation for college and work. The list of data sources and published materials is not exhaustive, but were selected because they represent comprehensive research and analyses on high school and college student achievement, and the skills and competencies needed for success in postsecondary education and the workplace.

Alene Russell, Melodie Christal and Sheila Arredondo selected and summarized the information in this document. Alene Russell and Melodie Christal staff the SHEEO/NCES Communication Network, and bring invaluable experience and knowledge about national education data sources. Alene compiled information on key data sources and identified materials pertaining to student preparation for college. Melodie collected information on collegiate success. Sheila Arredondo, consultant to SHEEO, helped identify principal sources on workforce preparation. *An Annotated Bibliography on Student Preparation for College and the Workplace* is an indispensable resource for state leaders, educators, employers and others who are involved in developing policies and strategies that support and strengthen student success in school, college and work.

Esther M. Rodriguez
SHEEO Associate Executive Director
September 1995

Section I
Primary Data Sources

This section describes key national data sources pertaining to student preparation for college and the workplace, and student success in college. In most cases, they represent the best data available on these topics, due to their large sample size, wide range of data elements, national scope, longitudinal design and/or methodological sophistication. Over past decades these sources have led to many published reports and have provided a foundation for what is known about these subjects. (Many of the reports described in sections II through IV are based on these data.) In addition, they contain a wealth of unpublished information and offer great potential for secondary analysis.

These data sources are compiled in a separate section because they are a valuable resource for researchers and policymakers. In many cases, interested parties may obtain direct access to data files or request special analyses. Data sources should be contacted directly for specifics on data availability.

American College Testing (ACT)

Through the High School Profile Service, ACT annually compiles data on over a million students, including scores and sub-scores on the English, mathematics, reading and science reasoning tests, plus a composite score. Information also is available about:

- Student background (gender, race/ethnicity, family income, expressed financial need and maximum yearly college tuition)

- Academic preparation (high school grade-point average; high school class rank; whether student has taken core college preparatory curriculum; specific course work in English, mathematics, social studies, natural science, languages and arts; type of high school curriculum or program; request for assistance with education/occupation plans, expressing ideas in writing, reading, study skills, mathematics skills and personal concerns; special college-preparation program — independent study or honors courses; and advanced placement courses)

- Student satisfaction with various aspects of high school (classroom instruction, number and variety of course offerings, grading practices and policies, number and kinds of tests given, library, laboratory facilities, provisions for special help, provisions for academically outstanding students, etc.)

- College plans (planned major and degree-level aspiration)

ACT is developing longitudinal student databases, following 250,000 students through their first year of college. ACT also follows a smaller sample of students for five years after high school graduation.

ACT annually publishes national data in *The High School Profile Report: Normative Data*. In addition, ACT works with individual states or institutions on a number of special projects, including longitudinal analyses, school-to-work transition and "authentic" assessments.

Selected findings from ACT data include:

- Students who achieve higher ACT scores generally have a higher high school grade-point average, higher class rank, higher degree-level aspirations and have completed college-preparatory courses.

- New longitudinal data show that these same factors not only predict higher ACT scores, but also greater college success.

- Nearly one-fifth of high school students who plan to major in science do not take three years of mathematics and science courses in high school. Students who have not completed these courses achieve at a significantly lower level on ACT mathematics and science reasoning tests and have a significantly lower chance of success in college mathematics and science course work.

The ACT longitudinal databases offer great potential for addressing policy questions related to student success in college and for providing detailed information about high school background, and college preparation and experiences. However, because the ACT-tested population may not be representative of a state, school or other unit of analysis, caution should be used in making comparisons among samples.

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The College Board

The College Board collects information on over a million SAT test takers each year. Data include scores on SAT and PSAT verbal and mathematics tests, the Test of Standard Written English (TSWE), achievement tests and 29 separate Advanced Placement (AP) tests. In addition, a Student Descriptive Questionnaire (SDQ) collects self-reported information about:

- Student background (gender, ethnic group, first language learned, citizenship, disabling condition, plans to apply for financial aid, income and highest level of parental education)

- Academic preparation (high school rank; high school grade-point average; total years of study in six academic subjects; specific course work in English, arts and music, social sciences and history, foreign and classical languages, natural sciences, mathematics and computer; plans for advanced placement in college; and completed honors courses taken)

- College plans (intended major and degree-level aspiration)

Secondary school information, supplied by schools, includes type of high school, location of high school and size of senior class.

National summary data are published annually in *College-Bound Seniors: Profiles of SAT and Achievement Test Takers*; state summary reports also are published annually. More detailed SAT data are contained in annual national and state reports entitled *Ethnic/Sex Data.* The College Board also publishes annual *Advanced Placement National Summary Reports*, the more detailed *AP Yearbook* and state AP summary reports. Data tapes are available and the College Board will work with users needing special analyses.

Selected findings from College Board data include:

- Increased high school rank, grade-point average and several years of study in academic subjects are associated with higher mean SAT scores.

- There are differences in course-taking patterns and test-score patterns among males and females.

- The gap between SAT scores for African American and non-minority students has narrowed over time and more minority students are taking AP tests than before.

The College Board notes that SAT scores are related to academic performance and intended to help predict the freshman-year college performance of individual students. These data can be used to address questions about academic preparation, student subgroups and changes over time. However, because the population of test takers is self-selected, scores should not be used to compare or evaluate education units such as teachers, schools or states.

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Cooperative Institutional Research Program (American Council on Education/University of California, Los Angeles)

Since 1966, the Cooperative Institutional Research Program (CIRP) has conducted a survey of entering freshmen in a national sample of colleges and universities. Administered at the Higher Education Research Institute (HERI) at UCLA since 1973, CIRP is now the nation's largest and longest empirical study of higher education. National norms for first-time, full-time students are produced each year; data also are collected on part-time and transfer students. In fall 1994, over 333,000 students were surveyed from 670 two- and four-year public and private colleges and universities.

The freshman survey contains baseline descriptive data including:

- Demographic characteristics (age; gender; racial/ethnic background; marital status; religious preference; and parental education, income and occupation)

- Academic preparation (high school grades; SAT/ACT scores; whether student has met or exceeded recommended years of study in English, mathematics, foreign language, physical science, biological science, history/American government, computer science and arts/music; and self-assessment of preparation in various subject areas)

- College finances (reliance on family, government and institutional assistance, as well as work-study funds and savings; and student concern about college finances)

- Orientation toward college (why student decided to go to college; why student selected a particular college; number of other applications and acceptances; and student expectations — self-predictions about grades, degree completion and changing major)

- Aspirations (probable major, career preferences, highest degree sought and life goals)

- Attitudes and values (personal values, and attitudes about higher education and national issues)

In 1982, CIRP began a follow-up program to survey students two and four years after college entry. This developed into the annual College Student Survey through which follow-up data are collected at different intervals and linked back to freshman data for the purpose of longitudinal study. CIRP also is conducting the "Nine-Year Follow-Up of the 1985 Freshman Class" which involves more than 50,000 students who responded to the 1985 freshman survey. The follow-up College Student Survey contains information about:

- Academic achievement in college (grades and degree attainment)

- Stability or change in institutional choice, including when and why students who transferred or withdrew decided to do so

- Stability or change in major, degree goals, life goals and postcollegiate plans

- Satisfaction with various aspects of the college experience (teaching, faculty, programs and services)

- Student experiences since entering college (activities; academic and/or financial difficulties; and changes in employment and marital status)

A national summary report entitled *The American Freshman: National Norms for Fall (year)* is produced annually; periodic trend reports also are published. The most recent, published in 1991, is Eric L. Dey, Alexander W. Astin, and William S. Korn's *The American Freshman: Twenty-Five Year Trends*. These reports primarily consist of frequency distributions for each data element; they do not address relationships among items, nor do they summarize longitudinal data.

The most complete longitudinal analysis of CIRP data is found in Alexander W. Astin's *What Matters in College? Four Critical Years Revisited*, 1993, described in section III of this bibliography. Findings suggest that:

- The best input predictors of students' college grades are high school grade point average and SAT verbal score. Other predictors of "scholarship" are gender (being female); race (being white); socioeconomic status; self-ratings of academic ability, writing ability and drive to achieve; and academic rank in high school.

- Students who interact most with faculty show the greatest increase in "scholarship." Taking interdisciplinary, science or mathematics courses; participating in independent research projects; making class presentations; and tutoring other students also have positive effects on "scholarship."

- The single strongest predictor of degree completion is high school GPA; SAT mathematical and verbal scores also are strong predictors. Curricular variables having positive effects on retention include a true, core curriculum, a distribution system with a range of progressive course offerings and a required senior comprehensive examination.

- Living in a campus residence, attending a smaller school and "student orientation" of faculty also have positive effects on retention.

Institution-specific reports are prepared annually for participating colleges and universities, and institutions have used CIRP data to analyze such topics as admissions and recruitment practices, student retention, and curriculum and programs. In addition to the data services offered to participating institutions, on occasion, HERI will conduct special analyses for non-participants for a fee. Data sets generally are not made available to the public.

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National Assessment of Educational Progress (NAEP)

NAEP is an ongoing, congressionally-mandated project established in 1969 to obtain data on the education achievement of American elementary and secondary students. NAEP conducts biennial assessments of a sample of students by grade (4, 8 and 12) and by age (9, 13 and 17) attending public and private schools. It evaluates students' proficiencies in reading, mathematics, science, writing, history, geography and other academic subjects. In addition to gathering cognitive data, NAEP collects information from students, teachers and school officials. A major purpose of NAEP is to measure change in student performance over time for different demographic groups in different parts of the country.

Data collected include:

- Student proficiencies in specific academic areas (including "performance" tasks rather than multiple-choice tests)
- Demographics (sex, region, race/ethnicity, type of community, type of school and parental education)
- Education policy areas (instructional content, practices and experiences; teacher characteristics; school conditions and context; and conditions outside school that affect learning and instruction)

For detailed information on the frameworks developed in each subject area, see *Overview of NAEP Assessment Frameworks*, U. S. Department of Education, Office of Educational Research and Improvement, 1994.

The most recent detailed trend data may be found in *NAEP 1992 Trends in Academic Progress*, prepared by the Educational Testing Service under contract with the National Center for Education Statistics. Findings include:

- Average science and mathematics achievement in 1992 was at least as high as in the early 1970s, if not higher. Declines in science and mathematics achievement at age 17 occurred during the 1970s, but were followed by a period of recovery from 1982 to 1992.

- Average reading achievement in 1992 was at least as high, if not higher, than in 1971.

- Unlike the patterns in mathematics and science, during the 1980s there was a significant decline in reading achievement at age 9. In general, there have been no significant improvements in reading or writing performance since 1984.

- African Americans and Hispanics continue to demonstrate significantly lower academic proficiency than non-minority students, despite the fact that the gaps have narrowed somewhat.

- Students reported an increase in science and mathematics course work overall, and an increase in more advanced mathematics course work. There were significant increases in the percentages of nine-year olds who had used a thermometer, microscope and calculator. Many more students had used computers for mathematics learning in 1992 than in 1978. Students were doing more homework, and writing essays and stories in 1992 than earlier.

- Students taking general science, biology or chemistry showed a significant increase in average proficiency between 1986 and 1992, whereas average proficiency did not change for students taking physics. Students taking more advanced courses in mathematics showed a higher mathematics proficiency.

- Students showed higher reading proficiency if they read several pages per day at school, spent more time on homework, and read more newspapers, magazines and books at home.

Over 200 reports based on NAEP data have been produced. As the nation's only ongoing, comparable and representative assessment of what American students' knowledge and skills, NAEP data are a unique resource to monitor student achievement in the United States and to analyze student achievement over time in relation to several education policy areas.

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National Center for Education Statistics' (NCES) Longitudinal Studies

NCES has conducted longitudinal studies since 1972 which follow students from secondary education to postsecondary education to the workforce. Each of the studies collect somewhat different data which may include student background characteristics, high school academic preparation, student motivation/college plans, other high school factors, college experiences, college persistence and completion, and workforce experiences. Many studies supplement student surveys with parent, teacher, transcript and other data sources. The studies include:

- The *National Longitudinal Study of 1972 (NLS-72)*, NCES' first longitudinal study, explores the transition students make from high school to college to work. It follows and reports information about high school seniors from the class of 1972, plus follow-up data collected in 1974, 1976, 1979 and 1986. Postsecondary transcript data were collected in 1984.

- *High School and Beyond (HS&B)* follows high school sophomores and seniors after graduation to postsecondary education and work. The study began in 1980 with follow-up data collected in 1982, 1984, 1986 and 1992. Postsecondary transcript data were collected in 1993 and also are included.

- The *National Education Longitudinal Study of 1988 (NELS-88)* follows eighth graders through high school and postsecondary education. The study began in 1988; follow-up data were collected in 1990 and 1992.

- *Recent College Graduates (RCG)/Baccalaureate and Beyond Longitudinal Study (B&B)* looks at the immediate post-degree employment and educational experiences of people who obtained bachelor's and master's degrees. Periodically conducted since 1976, the 1987 and 1991 surveys were augmented with transcript data.

  Replacing RCG in 1994, B&B focuses on the movement and interaction between education and work experiences. It follows all bachelor's degree recipients originally surveyed in NCES' National Postsecondary Student Aid Study (NPSAS). NPSAS, conducted every three years, provides extensive information on the undergraduate education experience; B&B follows up on these students one year after graduation.

- The *Beginning Postsecondary Students Longitudinal Study (BPS)*, established in 1991-92, also is based on NPSAS participants. BPS follows up with all first-time, beginning students in the NPSAS sample at two-year intervals for at least a six-year period, collecting data on student persistence, progress and degree attainment from initial entry into college through entry into the work force.

NCES has produced many reports from its longitudinal studies, some based on a single study and others comparing findings across studies. Several of these are summarized in section II of this document.

Selected findings from NCES longitudinal studies include:

- Above average high school grades, being in an academic program in high school and higher parental education are associated with a greater likelihood of attending college immediately after high school.

- Being white, having an above-average socioeconomic status and receiving a higher ability level on a series of cognitive tests are associated with higher rates of receiving postsecondary degrees.

- Above average high school grades; taking calculus, physics, or trigonometry in high school; self-reports of spending more than five hours per week on homework; and scoring in the top quartile of the HS&B achievement test are associated with majoring in science, engineering or math.

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National Center on Postsecondary Teaching, Learning and Assessment (NCTLA), The Pennsylvania State University

NCTLA, created in 1990 by the U.S. Department of Education's Office of Educational Research and Improvement (OERI), is the only federally-funded R&D Center devoted exclusively to postsecondary education. NCTLA explores the many and diverse factors influencing college students' learning; it uses a comprehensive, integrated research design to examine four sources of influence on student education outcomes: curriculum; formal, instructional experiences; out-of-class experiences; and institutional, structural and climate/cultural characteristics. Four general outcomes are the focus of attention: content learning, cognitive development, learning-related attitudes and values, and persistence.

NCTLA has a number of research projects under way, but the largest is the National Study of Student Learning (NSSL). This three-year study follows a panel of approximately 4,000 students who entered 23 institutions around the country in the fall of 1992.

Selected findings from NSSL include:

- Students attending two-year institutions show first-year gains in critical thinking, reading comprehension and mathematics comparable to those of similar students entering four-year institutions.

- African-American students attending an historically African American college or university show first-year gains in reading, mathematics and a composite measure of achievement as do African-American students attending a predominantly non-minority institution.

- Students' courses, formal instructional experiences, out-of-class experiences, and perceptions of institutional culture and climate all make statistically significant contributions to first-year gains in students' critical thinking abilities.

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A summary of findings based on the first year of NSSL and a complete NCTLA publication list may be obtained from:

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Section II
Student Preparation for College

This section addresses many facets of student, college preparation: changes in high school course-taking patterns and levels of student achievement; how high school preparation relates to college success; gender, race/ethnicity and family characteristics issues; and state-level high school graduation and higher education policies. The majority of the publications summarized here are data-based reports and many utilize data sources described in the first section of this document. A few reports treat the state as the unit of analysis, and these are included as source books on state-level policies and practices. Reports in this section are listed in chronological order.

Rock, Donald A., Ruth B. Ekstrom, Margaret E. Goertz, Thomas L. Hilton and Judith Pollack, *Factors Associated With Decline of Test Scores of High School Seniors, 1972 to 1980 -- A Study of Excellence in High School Education: Educational Policies, School Quality and Student Outcomes*, Washington, D.C.: U.S. Department of Education, Center for Statistics, 1985.

In the early 1980s, at least eight major national reports on the status of American public education expressed concern that academic achievement had declined. This study sought to explore the sources of decline and identify practices that contribute to excellence in education. The researchers analyzed National Longitudinal Study (NLS-72) and High School and Beyond (HS&B) data to document changes in the academic achievement of high school seniors between 1972 and 1980, and identify the student and school factors related to these changes. The report is rich in data about student body and staff characteristics; educational programs and teaching methods; student outcomes; and student attitudes, values and behaviors.

The analysis documented declines on three achievement tests — vocabulary, reading and mathematics — between 1972 and 1980, but noted these declines were greatest for whites. It found, unexpectedly, that demographic shifts played a minor role in test score decline; instead, the following factors contributed most to the decline:

- Being in a general or vocational curriculum rather than academic curriculum
- A drop in the frequency with which students took "traditional" college courses such as foreign languages, science and/or courses requiring laboratory work
- A decrease in the amount of time spent on homework
- An increasing dissatisfaction with the lack of emphasis on academics in schools among students

The authors conclude that the major factor contributing to test score decline was "a decreased academic emphasis in the educational process." This impact was felt mainly by non-minority and upper- and middle-class students. Federal and state programs designed to strengthen

basic skills have prevented comparable score declines among low socioeconomic-status African Americans in vocabulary and reading and have contributed to their score increase in mathematics.

Based on the study's findings, the authors recommend that:

- Students should devote significantly more time to the "New Basics" — English, mathematics, science, social studies, computer sciences and, for the college-bound, a foreign language. Students also should be given more opportunities to write and participate in laboratory courses.

- The content of instructional materials should be made more academically demanding.

- Homework should be required regularly of all students.

- The federal government, in cooperation with states and local school districts, should continue to provide special programs for academically and economically disadvantaged, and handicapped and language minority students.

Although a decade old, this report has relevance today for those who want to examine the successes and limitations of the education reforms of the 1980s.

Laing, Joan, Harold B. Engen and James Maxey. *Relationships Between ACT Test Scores and High School Courses*, Iowa City, Iowa: The American College Testing Program, 1987.

In the early 1980s, considerable concern was expressed throughout the country that high school graduates were not adequately prepared for higher education or the workplace. Several states responded by increasing high school graduation and college entrance requirements. This study was designed to determine whether the increased requirements resulted in higher scores on related ACT tests. It also addressed whether effects were consistent across sex, race and ability level of students. Data came from the ACT Assessment Program database.

Study conclusions include:

- On average, adding a course in English, mathematics, natural science and social studies results in a higher mean score on the corresponding ACT test.

- The most substantial score increase was in mathematics.

- Regardless of their gender, racial/ethnic group or high school class rank, students who take more academic courses earn higher ACT scores.

- The number of mathematics and science courses taken contributes more than any other factor to ACT test scores.

The authors conclude that these findings have significance for high school counselors and those working in college admissions. Given that there is a direct relationship between ACT test scores and college achievement, the implication is that adding additional academic courses in high school will improve college achievement. The authors note that counselors should be attentive especially to the course work patterns of minority students and female students in the areas of mathematics and science. They caution, however, that these findings represent group data; individual students should not be forced to take courses in which they have no interest and/or for which they are ill-prepared.

Astin, Alexander W. and Eric L. Dey. *Predicting College Student Retention: Comparative National Data from the 1982 Freshman Class*, Los Angeles: Higher Education Research Institute, University of California, Los Angeles, 1989.

College student retention is a topic of great interest. To compare retention rates across institutions, differences among entering students must be considered. This report addresses how high school student preparation levels affect student retention in college and completion of a bachelor's degree. The primary purpose of this report is to enable institutions to determine how successful they are at retaining students by comparing an "expected" retention rate based on freshman characteristics with an actual rate. However, the report also speaks to a wider audience because it presents data relating student academic preparation and graduation rates. The study utilizes longitudinal data from the UCLA Cooperative Institutional Research Program.

The authors show that:

- The higher the selectivity of an institution (based on SAT scores), the higher the institution's retention rate.

- The higher an individual's SAT scores, the greater is his/her likelihood of graduating in four years. For example, students with the highest combined SAT score (1300 or more) are almost five times as likely to earn a bachelor's degree in four years than those with the lowest scores (below 700) — 67% compared to 14%.

- High school grade point averages affect college retention. For example, a student with high school grades averaging A or A+ is more than six times as likely to complete a bachelor's degree in four years than is a student with grades below C+ (54% compared to 8%).

- Students with A or A+ high school grade point averages and the highest ACT test scores are more than 12 times as likely to receive a bachelor's degree in four years than students with an average of C+ and the lowest SAT scores (71% compared to 5%). Students in the middle (B+ students with SAT scores between 1000 and 1149) show graduation rates between these two extremes (47% graduate in four years).

In addition to looking at SAT scores and high school grade point averages, the authors examine the effects of several other characteristics of incoming freshman on the probability of

completing a bachelor's degree. The study includes predictive equations that take into account the effects of gender and race/ethnicity.

Pelavin, Sol H. and Michael Kane. *Changing the Odds: Factors Increasing Access to College*, New York, NY: The College Board, 1990.

Since the late 1960s, the proportions of minorities completing high school and enrolling in college have increased significantly. However, the college *completion rates* of minorities.

In the late 1980s, as part of its commitment to education equity, The College Board began investigating which aspects of high school preparation are most closely associated with participation in and successful completion of higher education. This report represents one part of that effort, investigating how demographic characteristics, college aspirations and high school courses affect college attendance and completion. A specific purpose of the study was to determine if any high school courses serve, in effect, as gatekeepers to future college participation and success. Data sources include the U.S. Census Bureau's Current Population Survey (CPS), NCES' HEGIS/IPEDS fall enrollment survey and NCES' High School and Beyond (HS&B) database.

The study found that the following factors are closely related to college attendance: race/ethnicity (being white) and family income (higher); high school sophomores reporting that they expect to complete a bachelor's degree; and taking algebra, geometry, at least one laboratory science course and at least two years of foreign languages.

The study also found that poor and minority students are less likely to take these key academic courses than their non-poor and white counterparts. Even among students who plan to complete a bachelor's degree, these differences still occur, though to a lesser degree.

However, the researchers found that when minorities take advanced courses and aspire to attend college, the racial/ethnic gap in college attendance is reduced greatly. Taking geometry is the strongest predictor of college attendance — 80% of students that take geometry in high school
attend college within four years after high school graduation, a finding that is true regardless of race or income. The authors note, "those students who want to get a college degree, and know which courses will lead them toward the goal, go to college."

Finally, the same courses associated with college attendance are associated with attainment of senior status in college. Taking high school geometry, in particular, reduces the gap between minority and white, poor and non-poor students. Aspiring to obtain a bachelor's degree reduces this gap somewhat, but aspirations play a smaller role than completing advanced high school courses.

As a result of these findings, the authors recommend that all students be required to master algebra and geometry, and be encouraged to attend college.

Clune, William H., Paula A. White, Shirley Sun and Janice H. Patterson. *Changes in High School Course-Taking, 1982-88: A Study of Transcript Data from Selected Schools and States*, New Brunswick, NJ: Rutgers, The State University of New Jersey, Consortium for Policy Research in Education, 1991.

Encouraging students to take more academic courses was a major goal of education reform in the 1980s; raising state high school graduation requirements was the most popular policy instrument used for that purpose. This study examined changes in course-taking in states that adopted high graduation requirements, focusing on graduates of high schools that enroll mostly lower-achieving students. Random samples of transcripts from 16 schools in four states were collected at three points in time, both before and after requirements became effective.

The reported changes were described as "at least a moderate success." Average credits per student increased in all academic subjects, and the level of difficulty of these courses also increased. Science gained the most, and there were gains in advanced English courses and pre-algebra and algebra; remedial mathematics courses lost credits. Graduates of lower-achieving, heavily urban schools did not enroll in college preparatory courses at the same rate as other students. However, they did experience gains in such courses as pre-algebra and algebra, courses that have been shown by research to have a substantial effect on achievement test scores.

Contrary to concerns about possible negative effects of higher standards, gains for graduates did not seem to produce more failure for other students. A separate sample of ninth graders in the same schools (not necessarily high school graduates) showed little evidence of reduced course work, higher rates of withdrawal from school or lowered difficulty of course work.

Finally, evidence of whether state graduation requirements had an independent effect on course taking is ambiguous. In fact, substantial change occurred prior to reform.

Flanagan, Patricia A. *Raising Standards: State Policies to Improve Academic Preparation for College*, Rockville, MD: Westat, Inc., 1992.

This report examines state higher education policies that influence student preparation for college, specifically admissions requirements, high school feedback systems and merit aid. Prepared by Westat, Inc. under contract to the U.S. Department of Education, it summarizes information gathered from state higher education officials between December 1991 and April 1992.

When a state adopts more stringent college admissions requirements, it may encourage high schools to strengthen their college preparatory curricula. Many experts believe that more demanding standards will improve the quality of high school graduates and reduce the proportion of students needing college-level remediation. This study found that 27 states have minimum requirements beyond a high school diploma or GED, and of those states, 20 have established or modified requirements since 1986.

Formal high school feedback systems provide high schools with data on academic college performance of their recent graduates. These kinds of systems can lead to more focused counseling, teacher training and curriculum development at the high school level. Twenty-seven states have established a policy that feedback systems should be in place and 19 are fully established. The majority of these are recent in origin — only three systems were established before 1980.

Finally, merit-based aid programs may motivate students to work diligently throughout high school and encourage them to plan for college; they also may serve to influence top students to attend college in-state. Thirty states now reward high-achieving students, but significantly, several states have terminated such programs or reduced the number of awards due to funding difficulties.

In addition to an executive summary, this report contains state-by-state descriptions of current policies and practices in each of these three areas as well as information on future initiatives. Summary information also is provided in tabular form.

Loeb, Jane W. *Academic Standards in Higher Education*, New York: The College Board, 1992.

This report explores the complexities involved in setting, maintaining and judging standards in higher education, and examines the effects that school and college standards have on each other. Based on an extensive review of relevant literature, it gives special emphasis to the implications of selective college admission practices.

As background, the author notes that the overall preparation level of students declined from the mid-1960s to the early 1980s, demonstrated by data from SAT, ACT, NAEP, NCES' National Longitudinal Study (NLS-1972) and High School and Beyond (HS&B), the Iowa Assessment of student achievement in grades 3 through 12 and other sources. More recent data show improved performance, a smaller gap between white and minority students, and students enrolling in more high school mathematics and science courses. However, performance is still relatively low, both in absolute terms and by international comparison.

It is widely believed that college admission requirements affect both the high school curricula and the courses selected by high school students. Likewise, they affect the college curriculum that can be offered, and retention and graduation rates. While there is no one set of "correct" admission standards for all colleges and all time, the author asserts, it is important that colleges structure admissions in ways that encourage students' effort in rigorous college-preparatory programs.

What students learn in college is heavily dependent on what they are expected to learn and on the teaching methods employed. Grading standards are a key component to academic standards, yet how to identify appropriate standards is a complex matter. Grade point average alone is a very rough index of both individual achievement and academic standards of the institution. The final point at which students are judged is graduation; the performance level of graduating seniors is another indication of the standards in effect at institutions.

Diversity is a hallmark of U.S. higher education. The author argues that a diversity of standards for entry, content, grading and certification is appropriate in a nation that seeks to provide access to postsecondary education for all who seek it. She asserts, "the focus in discussing standards needs to move from the global to the particular. . . The emphasis should shift from statewide testing programs using common measures for all students and programs toward investigations of the instructional methods that can best help students of a particular background master one particular content area. It is at this level that we can. . . set, maintain, or enhance academic standards — which ultimately have to do most importantly with what students learn."

Rasinski, Kenneth A., Steven J. Ingels, Donald A. Rock and Judith M. Pollack, *America's High School Sophomores: A Ten Year Comparison*, Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 1993.

By the early 1980s, America's primary and secondary educators faced increasing challenges. In response to widely noted education performance declines, many policymakers raised their state's graduation requirements, set stricter attendance standards, increased standardized testing of students and teachers, and stressed the use of new instructional techniques. Demographic and socioeconomic changes also created challenges. The changes included an increase in cultural and racial diversity among students, fewer two-parent families, more working mothers, more children living in poverty, and more students coming to school from non-English language backgrounds.

The authors of this study sought to determine how these factors changed American high school sophomores between 1980 and 1990. Specifically, were they being better educated overall by the end of the decade? Were learning opportunities more equitably distributed?

To accomplish their goal, the authors examined differences between 1980 High School & Beyond (HS&B) sophomores and 1990 National Educational Longitudinal Study (NELS) sophomores, arguing that students in the earlier group were products of an era of education decline and students in the latter group were the first to be stamped by education reform.

Study findings include:

- While the 1970s saw a shift away from enrollment in academic curriculum, the 1980s saw increased enrollment in academic curriculum. Students from all socioeconomic backgrounds were more likely to be registered in college preparatory programs.

- While achievement test scores declined during the 1970s, mathematics achievement increased during the 1980s. White and Asian students continued to show the highest level of achievement, but the gap narrowed between white and other minority students during the decade.

- Postsecondary expectations increased during the 1980s. 1990 sophomores were significantly more likely to expect to complete a bachelor's or advanced degree than were 1980 sophomores. Postsecondary expectations of African Americans, Hispanics and

individuals in the lowest socioeconomic status group showed large increases. (These were indeed matched by increasing college enrollment, demonstrated by other data sources.)

- 1990 sophomores in all socioeconomic and racial groups reported receiving significantly more adult encouragement to attend college than did 1980 sophomores.

The general conclusion of this report is that "some academic progress," accompanied by "some gains in equity," was achieved in the 1980s. However, modest gains may not be enough and overall performance remains low, as measured by other data. While it is beyond the scope of this report to investigate the dynamics and effects of educational processes, this report argues that studies such as HS&B and NELS provide critical data for understanding how better to improve schools and make more effective learning available to all.

Coley, Richard J. *Testing in America's Schools*, Princeton, NJ: Educational Testing Service, 1994.

Policymakers use testing as a lever to raise student achievement levels. This education improvement method began with an explosion in state standardized testing in the 1970s and grew with calls for broadened education assessment in the late 1980s.

This report is a source book on K-12-level state testing programs and classroom testing practices. It describes the various ways in which K-12 students are assessed, which ultimately affects student preparation. Data primarily are drawn from the *State Student Assessment Program Database* produced by the Council of Chief State School Officers (CCSSO) and the North Central Regional Educational Laboratory (NCREL).

The report notes:

- The three most prevalent purposes of state testing programs are accountability, instruction improvement and program evaluation. Next are student diagnosis/placement and high school graduation.

- Thirty-eight state testing programs include writing samples, 34 use norm-referenced tests (comparing student performance to that of other students taking the same test) and 34 use criterion-referenced tests (comparing student performance to predetermined performance criteria). Seventeen use some form of performance assessment and six collect student portfolios. When states use tests for high school graduation purposes, just one uses a norm-referenced test, 20 use criterion-referenced tests, two use performance tests and 13 use writing samples; no state uses portfolios.

- Non-multiple choice testing appears to be the predominant classroom assessment technique.

This report provides state-by-state data about the types of non-traditional state assessments in use. These include enhanced multiple-choice items, generally asking for explanations or having more than one correct answer (14 states), short answer open-ended items (18 states),

extended-response, open-ended items (22), interviews (3), observation (4), individual performance assessment (14), group performance assessment (7), portfolio or learning records (9), and project, exhibition or demonstration (5).

The author concludes the report by noting that it remains to be seen whether performance-type assessments will displace traditional machine-scored, multiple choice tests.

Coley, Richard J. *What Americans Study: Revisited.* Princeton, NJ: Educational Testing Service, 1994.

In the early 1980s, a consensus emerged that American high school curriculum should be strengthened. In 1983, the National Commission on Excellence in Education urged that high school students should complete a program (here called a "core curriculum") which includes: four years of English, three years of social studies, three years of science, three years of mathematics, two years of a foreign language (recommended for students planning to attend college) and one-half year of computer science. This report tracks changes in high school course taking during the 1980s, using data from NCES longitudinal studies, the College Board's Advanced Placement Program and NAEP.

The researchers found that:

- In 1990, 17% of high school graduates completed a "core curriculum," compared to only 2% in 1982. This progress applied to both males and females and to all racial/ethnic groups.

- Excluding the foreign language and computer science courses from the core curriculum (leaving what is here called "a minimum academic program"), 40% of 1990 graduates completed this minimum academic program, compared to only 13% in 1982.

- Course-taking increased in English, history, mathematics, science, foreign language and computer science, and in advanced sequences of mathematics and sciences; course-taking decreased in remedial mathematics, occupation-specific vocational education and in non-occupation-specific vocational education.

- Males and females took the "core curriculum" and the "minimum academic program" at about the same rates. However, males were more likely than females to take an advanced sequence of science courses and calculus.

- There were differences in course-taking patterns among racial/ethnic groups. For example, Asian/Pacific students took more mathematics and advanced sequences in mathematics and science than other students; African American and Hispanic students took more remedial mathematics.

- In 1993, more than 90% of SAT test takers took algebra and geometry; 97% took biology and 82% took chemistry.

- Advanced Placement assessment participation continues to rise: over the decade, the number of AP examinations taken increased by 270%.

- Instruction emphasis differs by student ability. From NAEP data, it was shown that students in lower ability groups were more likely to receive mathematics instruction that heavily emphasized mathematics facts and concepts, and less likely to receive instruction that emphasized reasoning to solve problems or communicating to effectively express ideas.

The report notes that while there is much good news in the data, there also is much room for improvement. Furthermore, the data are limited in that they reflect course titles and brief course descriptions; detailed information on actual course content is not provided.

Grissmer, David W., Sheila Nataraj Kirby, Mark Berends and Stephanie Williamson. *Student Achievement and the Changing American Family*, Santa Monica, CA: Rand, 1994.

This report addresses three issues related to student performance over the past 25 years: whether performance is getting better or worse, whether changes in family and racial/ethnic characteristics have affected average student achievement and whether the greatly expanded investment in education and social programs directed toward equal education opportunities have been effective. Based on data from several NCES longitudinal studies, NAEP, the Census Bureau and other sources, the authors try to sort out the net effects of families, schools and social programs to student achievement; in the process of comparing predicted changes to actual changes, the authors challenge many commonly-held, negative perceptions about student achievement trends.

The authors contend that, counter to public perception, student achievement has increased since the 1970s: there have been gains in NAEP scores from 1970 to 1990 for each age group and test, with sizable gains for minority students. They note public opinion has been based partly on trends in SAT scores, but argue that SAT scores are inappropriate for monitoring such trends. (This argument is developed thoroughly in the report.)

Again challenging popular views, the authors suggest that demographic trends affecting the family over this time period contribute to rising, not falling, test scores. They claim the most important family influences on student test scores are level of parental education, family size, family income and age of the mother when the child was born. Of these, the two that have changed most dramatically over the past 25 years are parental education levels and family size, and *these have changed in a favorable direction.* (Many other factors are analyzed, but found to have much smaller effects on test scores.) Thus, changes in family characteristics would predict *higher* test scores overall in 1990, compared to 1970.

Additionally, the authors say family changes account for some of the increases in student achievement, but they also argue there are large residual gains in minority scores not accounted for by family changes. The most likely explanation for these gains is increased

public investment in schools, social programs and changing social practices, such as school desegregation and bilingual education.

The authors conclude by raising two questions for future research: first, what has caused the large gains in minority scores over and above those stemming from changing family characteristics? and second, have lower-scoring white youth also experienced similar gains? This report is noteworthy because it challenges simplistic, popular perceptions, and pays attention to detail and review of the literature essential to establishing a thorough understanding of the issues.

Rodriguez, Esther M. ***State-Level Education Reform: Collaborative Roles for Postsecondary Education*****, Denver: State Higher Education Executive Officers, 1994.**

Advocates of education reform suggest that the entire education enterprise — K-12 through postsecondary education — should become more of a "seamless web." This requires students to be prepared better and supported more as they make the transition from secondary to postsecondary education programs.

In 1993-94, SHEEO conducted a survey of state higher education agencies to determine the extent of their involvement in education reform and the issues they were addressing. This report summarizes the results of that survey, describing collaborative efforts between higher education agencies and the K-12 sector around the following education issues: admissions standards, community service, competency standards, curriculum development, data collection, early outreach, postsecondary options, teacher education, technology and workforce skills. Specific collaborative efforts in each state are described and contact persons are provided.

Section III
Student Success in College

Over the last decade, the increasing costs of college attendance and criticism of the quality of undergraduate education have contributed to volumes of literature on the effects of college on students. Section III summarizes some of this literature. Similar to section II, summaries are listed in chronological order.

Feldman, K. and T. Newcomb. *The Impact of College on Students*, San Francisco: Jossey-Bass, 1969.

This two-volume classic is one of the earliest major works about the impact of college on students. The authors reviewed more than 1,500 reports from the mid-1920s to the mid-1960s on the effects of college on students. Volume one summarizes and interprets the research on the impact of college. Volume two presents summaries in tabular form and data from these studies.

In their research, the authors were seeking an answer to the question: "under what conditions have what kinds of students changed in what specific ways?" They researched college image, nature and size, student characteristics, and homogeneity.

Their findings include:

- Students change during college years with considerable uniformity, regardless of the institution they attend. Attitudes held by students when they leave college tend to persist through their lives; going to college strengthens desirable values that otherwise might have been reversed.
- A college's image determines the kind of student it attracts.
- Impacts of different colleges vary according to the types of students who attend them.
- Small, residential colleges most frequently offer the best conditions to exert desirable and uniform effects on student development.
- Faculty members often are influential individually, particularly in respect to a student's career decision. Students expect student/faculty relationships to be professional, similar to a patient/doctor relationship.

The authors note there is no simple answer as to the impact college attendance has on students. However, all students who attend college undergo some impact from the experience, regardless of the length of time they are enrolled.

Oscar F. Porter. *Undergraduate Completion and Persistence at Four-Year Colleges and Universities*, Washington, D.C.: National Institute of Independent Colleges and Universities, 1989.

In 1987, the National Institute of Independent Colleges and Universities (NIICU) conducted a two-year study of the persistence behavior of undergraduates in four-year colleges and universities. In addition to comparing public and independent institutions, NIICU studied persistence of minority students, the unique experience of high-ability/low socioeconomic students and the role of grants in first-year persistence. NIICU used the NCES High School and Beyond (HS&B) database for this study, and specifically used data supplied by students in the third (1986) follow up.

In this study, persistence was defined as the flow of students into and out of college over a six-year period. Four categories of persistence were defined: completers (those who completed a bachelor' degree; persisters (those who were continuously enrolled but who have not completed a bachelor's degree); stopouts (those who left and returned); and dropouts (those who left and did not return).

Nearly two out of three 1980 high school seniors enrolled in some type of postsecondary education within six years of high school graduation. Among those attending a four-year institution, almost three-fourths enrolled full-time in fall 1980; the remaining one-fourth began college in a less-than-four-year institution, enrolled part-time or delayed entry for at least one semester. One in four students enrolled in an independent institution.

Study findings include:

- Degree completion was lower than anticipated from a review of earlier literature: after six years following high school graduation, only 41% of sampled students had completed a bachelor's degree and 44% had dropped out.

- Completion was more timely and at a higher rate in independent colleges and universities. The completion rate for traditional students enrolled in the independent sector was 54% after six years, compared to 43% in the public sector.

- African-American and Hispanic student completion rates lag behind those of non-minority and Asian-American students. The completion rates for African-American and Hispanic students are between 25% to 30%, compared to more than 50% for non-minority and Asian-Americans students. In general, completion rates for all minorities were higher in the independent sector.

- The greatest enrollment loss occurred during the first year and after the eighth semester. Although there were no major differences between students in the public and independent sectors, there were differences by ethnic group with Asian Americans more likely to remain enrolled and African-American students more likely to leave.

- As socioeconomic status and academic ability increase, completion rates also increase. However, there are differences by race and ethnicity. For example, socioeconomic status

has little impact on persistence of Hispanics, and African-American, high-ability students are more likely to drop out than other African-American students except those in the middle-ability level.

- Students who received grants in their first year of study were more likely to remain enrolled than students without grants. Nine out of ten students with grants during the first year were enrolled in the second semester; the rate for students without grants was 75%. These findings apply to both the public and independent sectors with no differences by ethnic group for grant recipients.

The report notes much must be done to improve completion and retention rates, particularly for minority students, and that this will not be accomplished simply by implementing new standards for access and performance; institutions also must change.

Mansfield, Wendy, Elizabeth Farris and MacKnight Black. ***College-level Remedial Education in the Fall of 1989*****, Washington, D.C.: U.S. Department of Education, 1991.**

Remedial education, and concern about its appropriateness at the college level, long has been an integral part of higher education. That concern has led to a debate over equity (providing adequate preparation for a diverse student population) and quality (ensuring high standards at colleges and universities). Although remedial education and preparatory programs have existed since the 1800s, they became more common in the 1970s as two- and four-year colleges responded to changing enrollment patterns of entering freshmen, declining high school achievement levels and adoption of open admission standards.

This report presents the findings of an NCES Fast Response Survey of colleges on remedial/developmental programs offered in fall 1989. The survey provides national estimates on: (1) institutions that offered remedial courses; (2) remedial courses offered in reading, writing and mathematics; (3) students enrolled in and passing remedial courses; and (4) faculty teaching remedial courses. It also provides information on characteristics of remedial courses and programs such as the type of credit given, use of placement tests, evaluations conducted, support services offered and activities institutions engage in to reduce the need for remedial education.

Highlights from the survey are noted below:

- Three out of four colleges and universities offered at least one remedial course. This is true for institutions with a predominately minority student body as well as those with a predominately non-minority student body. Sixty-eight percent offered remedial coursework in mathematics, 65% in writing and 58% in reading.

- At least one remedial course was offered in 91% of public colleges, 90% of two-year colleges, 64% of four-year colleges and 58% of private colleges.

- Thirty percent of all college freshmen took at least one remedial course. Twenty-one percent took mathematics, 16% took writing and 13% took reading.

- A greater proportion of freshmen at institutions with a predominately minority student body took at least one remedial course compared to freshmen at predominately non-minority institutions (55% compared to 27%).

- Approximately 20% of colleges awarded degree credit for remedial courses. About two-thirds awarded institutional credit which counted in determining full-time status but not toward degree completion.

- About 90% of institutions providing remedial courses used placement tests to select participants for remedial courses.

- One-third of colleges providing remedial education allowed students to take regular academic courses while taking remedial courses. Only 2% of colleges prohibited students from taking regular academic courses while taking remedial courses.

- Forty percent of colleges providing remedial courses were not engaged in any activities to reduce the need for remedial education. Fifty-four percent communicated with high schools about skills needed for college work, and 19% participated in workshops for high school faculty.

The authors found that between 1983-84 and 1989-90, 7% fewer institutions offered remedial courses; this was accompanied by a decrease in freshmen enrollment in such courses. During the same time period, the number of colleges offering support services specifically for students needing remediation increased from 90% to almost 100%.

Abraham, Ansley A. "They Came to College? A Remedial/Developmental Profile of First-time Freshmen in SREB States," *Issues in Higher Education*, No. 25, Southern Regional Education Board, 1991.

Although many people believe that remedial/developmental education began as a response to the Civil Rights movement or the equal opportunity legislation from the 1960s and 1970s, developmental studies were reported as early as 1828 at Yale University. This article traces the history of remedial education through the present time.

To help its constituents answer questions about remedial education, the Southern Regional Education Board (SREB) conducted a survey of 826 two-year and four-year public and private institutions in the 15 SREB states in 1988-89. The survey asked the following questions:

- What percentage of first-time freshmen need at least one remedial/developmental course in reading, writing or math?

- Are students taking remedial/developmental courses more likely to be from certain ethnic or gender groups?

- Has remedial education changed since 1984, how, and what is the reason for the change?

Findings from this study include:

- More than 90% of public colleges and universities, and 70% of private institutions offer remedial/developmental programs.

- In public institutions, more than one third (36%) of first-time freshmen are enrolled in at least one remedial course, comparing closely with private institutions where 32% are enrolled in remedial course work. The highest percentage occurs at public two-year colleges where 42% take such courses.

- Typically, students are least prepared in math, better prepared in writing and most prepared in reading.

- The six states that had mandated statewide assessment and placement programs in 1988-89 (Arkansas, Florida, Georgia, Tennessee, Texas and Virginia), reported higher average percentages of students needing remediation in all three areas (reading, writing and math).

- Approximately half of all entering African American or Hispanic students need remediation, more than students of other races or ethnic groups.

- Gender differences are small, regardless of the type of institution attended.

- Between 1984 and 1989, 55% of responding institutions reported an increase in remedial enrollments, 16% reported a decrease and 30% reported no change. Reasons cited for an increase include an overall increase in enrollment, better assessment and changes in placement policies. The number one reason for a decrease in remedial enrollment was better prepared students entering college.

The author concludes the article by discussing this study's usefulness in helping SREB reach its goal that by the year 2000, "four out of every five students entering college will be ready to begin college-level work." He suggests that several issues must be addressed such as how much remediation is enough, how to deal with the projected increase in the minority school-age population, and how collaboration between high schools and colleges can more adequately prepare high school students for college.

Pascarella, E.T. and P.T. Terenzini. *How College Affects Students: Findings and Insights from Twenty Years of Research*, San Francisco: Jossey-Bass, 1991.

In this book, the authors update Feldman's and Newcomb's 1969 book, *The Impact of College on Students*. It summarizes more than 20 years of empirical research about the effect college has on students, examining over 2,600 studies from the late 1960s through the 1980s. The authors address three questions:

- Do students change during their college years?

- To what extent are these changes attributable to the collegiate experience and not to other influences such as normal maturation?

- What college characteristics and experiences tend to produce which kinds of changes?

The authors found that it is difficult to separate the impact of college from other influences on students between the ages of 18 and 23, and thus change *during* college is not the same as change *due* to college. Research shows that undergraduate classes and collegiate life have a significant impact on students.

Two factors are crucial to bringing students to new levels of thinking and sensibility. First is the quality of the student's own effort in making use of the range of learning and social opportunities on a campus. The impact of college is not only the result of what a college does for or to a student, but also is the result of the student taking advantage of the people, programs, facilities and experiences the college makes available. The greater the effort, the greater the likelihood of educational and personal returns on that investment. The second important factor is the quality and actions of the other people in a student's undergraduate life including other students and faculty.

Other findings include:

- Where students attend college appears to be less important than what happens to them after they enroll. Elite or expensive institutions had scarcely any greater impact on student growth than other undergraduate institutions. Much of the difference in outcomes between highly touted colleges and other colleges appears to be due to the family income and high ability of the students admitted.

- The transition from high school to college is a pivotal time which involves unlearning past attitudes, values and behaviors, and establishing a new identity and learning new attitudes, values and behaviors.

- While off-campus employment has a negative effect on year-to-year persistence and bachelor's degree completion, part-time jobs on-campus have a positive impact on timely graduation and on the probability of enrolling in graduate or professional school.

- Living on campus acts as a powerful socializing and academic agent. On-campus residence permits ample opportunities for meetings with faculty and other students, and it is clear that faculty members have enormous influence on student change.

- When students are engaged actively in their classrooms and learning, mastery of content and cognitive development are highest.

This book concludes with a discussion of implications the study's findings have for institutional practice and public policy, specifically for academic and student affairs policy formation, and state and federal policy.

Astin, Alexander W. *What Matters in College? Four Critical Years Revisited*, San Francisco: Jossey-Bass, Inc., 1993.

In 1977, Astin published *Four Critical Years* which describes how undergraduates are affected by the kinds of colleges they attend and the kinds of experiences they have. This 1977 volume was described by the *Journal of Higher Education* as the most frequently cited work in higher education literature. In *What Matters in College? Four Critical Years Revisited*, the author presents a new and expanded study of how students change and develop in college, and what can be done to enhance that development.

The author's study focused on the traditional, full-time, undergraduate student who enters college soon after graduation from high school. Data were collected from a number of different sources including CIRP. Data were first collected from more than 25,000 entering freshmen at over 200 institutions in 1985 and then about four years later. Data also were obtained from faculty members from these same institutions. In this study, the author also incorporated a number of new variables: measures of the student's peer group characteristics; faculty values, attitudes and preferred teaching methods; features of the institution's curriculum; and student performance on college admission tests, and tests used for professional certification and admission to graduate and professional schools.

The study design included provisions to roughly determine what part of particular student outcomes could be attributed to the college experience rather than natural student maturation or societal-wide change. The author examined more than 190 environmental characteristics of institutions and detailed how these factors can shape students' personality and self-concept; patterns of behavior; values and beliefs; academic and cognitive development; career development; and satisfaction with the college environment.

Student outcomes are grouped in seven categories, each of which are addressed in separate chapters: (1) political identification of the student; (2) personality and self-concept; (3) attitudes, values, beliefs and life goals; (4) behavior patterns and changes; (5) academic and cognitive development; (6) career development; and (7) satisfaction with various aspects of college. Each of the seven chapters presents dozens of individual findings which are then interpreted in two summary chapters — one on environmental effects and one on the effects of student involvement.

One of the major findings of the research relates to the pervasive effect of peer groups: "Viewed as a whole, the many empirical findings from this study seem to warrant the following general conclusion: *the student's peer group is the single most potent source of influence on growth and development during the undergraduate years.*" The author noted that every aspect of the student's development — cognitive, affective, psychological and behavioral — is affected in some way by peer group characteristics. Generally, students tend to change their values, aspirations and beliefs in the direction of the dominant orientation of their peer group.

Other findings include:

- The values, attitudes, self-concept and socioeconomic status of a student's peer group are much more important determinants of how the individual will develop than are the peer group's abilities, religious orientation or racial composition.

- Faculty also play a very significant role in student development, second only to peer groups. Attending a college where faculty are heavily research-oriented increases student dissatisfaction with various aspects of college and has negative impacts on most measures of cognitive and affective development.

- Although institutional type and control are associated with several student outcomes, such institutional characteristics have little *direct* effect on these outcomes once peer group and faculty characteristics are taken into account.

- The form of the institution's general education curriculum has little direct impact on student development. Only a "true-core curriculum" that requires every student to take exactly the same courses appears to have distinctive effects on student outcomes, specifically high satisfaction with various aspects of college and positive effects on leadership.

As for student involvement in college, the author reports that learning, academic performance and retention are associated positively with academic involvement, faculty involvement and peer group involvement. Furthermore, a wide spectrum of cognitive and affective outcomes is negatively affected by forms of involvement that either isolate students from peers or physically remove students from campus, such as living at home, commuting and being employed off-campus.

The author concludes this book with a chapter entitled, "Implications for Educational Theory and Practice," and makes suggestions on how to increase the positive effects of college. He addresses a number of areas including peer groups, faculty, the curriculum, testing and resource allocations.

Tinto, Vincent. *Leaving College: Rethinking the Causes and Cures of Student Attrition*, Chicago: University of Chicago Press, 1993.

More students leave their college or university prior to degree completion than stay. Of the nearly 2.4 million students who entered higher education for the first time in 1993, over 1.5 million will leave without receiving a degree. Of those, approximately 1.1 million will leave higher education altogether, without ever completing either a two-year or four-year degree program.

The purpose of this book is twofold. First, based on student-departure research, it proposes a theory of departure from institutions of higher education which focuses on the role institutions play in influencing the social and intellectual development of their students. Drawn from studies of suicide and rites of passage to community membership, this theory stresses both the limits of institutional action and the responsibility institutions share in the education of their students. Higher education is similar to other communities in that departure reflects the

absence of social and intellectual integration into community life and the social support it provides.

Second, the book proposes a course of action that can be employed to confront the phenomenon of student departure. An institution's capacity to retain students is related directly to its ability to reach out and make contact with students, and integrate them into the social and academic environment of institutional life. It hinges on the establishment of a healthy, caring education environment which enables all students to find a niche in one or more of the many social and intellectual communities of the institutions. Almost any institutional action, whether in admissions, counseling, advising, academic programs and classrooms, or student life affects student persistence.

The author argues that retention should not be the ultimate goal of institutional action, though it may be a desirable outcome of institutional efforts. Instead, institutions and students would be better served if a concern for student education, and intellectual and social growth, were the guiding principle of institutional action. When that goal is achieved, enhanced student retention naturally happens. The author maintains that the key to effective retention lies in a strong commitment to quality education and building a strong sense of membership in the social and intellectual structure of institutional life.

Terenzini, Patrick T., Laura I. Rendon, M. Lee Upcraft, Susan B. Millar, Kevin W. Allison, Patricia L. Gregg and Romero Jalomo. "The Transition to College: Diverse Students, Diverse Stories." ***Research in Higher Education*** **35(1): 57-73, 1994.**

Although research indicates that student involvement is important in learning, little is known about how to help students become involved in their education. This article describes the Transition to College Project of the National Center on Postsecondary Teaching, Learning and Assessment (NCTLA) which addresses the following questions:

- What activities, relationships and experiences promote students' involvement in their new academic and social communities?
- What processes are involved in the transition from high school or work to college? How do students become involved in out-of-class activities?
- Who are the most important people who facilitate or impede that process?
- What experiences play a major role (positive or negative) in the success or failure of that transition?
- Does the nature of the transition process differ for different kinds of students?

NCTLA researchers interviewed 132 students from four types of institutions: a small, community college in a major Southwestern metropolitan area with one -third of the student body made up of Hispanics and one-fifth of African Americans; a small, predominately white residential liberal arts college in a Middle Atlantic state; a predominately African American,

urban, commuter, comprehensive state university in a major Midwestern city; and a large, Eastern, predominately white, residential, research university. Interview participants were selected to ensure a pool of students from diverse personal and academic backgrounds.

For all students, the transition to college involves adaptation to a new set of academic and social systems. For most "traditional students," going to college after high school was an expectation and these students never considered *not* going to college. For many "nontraditional students" (i.e., first generation and largely, minority students), going to college was not part of their family's tradition or expectation. Nontraditional students, therefore, often must reconcile and balance the demands of work, family, culture and academics whereas traditional students typically only have to deal with one or two of these demands.

Other findings in the report include :

- High school friends were instrumental in how successfully new students make the transition to college. When a new student first attends college with friends from high school or siblings, these friends function as a bridge from one academic and interpersonal environment to another during the early weeks of college. Friends who do not attend college can make the transition harder for commuting students.

- Families play a very important role in providing encouragement to attend college, and to persist and succeed. With few exceptions, students name family members when asked to identify the most important people in their lives.

- While all students stress the importance of experiences that reassure them they have what it takes to be successful in college, nontraditional students typically need validation on their academic abilities, whereas the concern for traditional students was for social validation.

- For both traditional and nontraditional students, the transition to college was one of camaraderie and to be shared. Nontraditional students, however, indicated that while having fun was important, academics were the top priority.

The study concludes that the transition from high school or work to college is a complex process and varies according to a student's background and personality, the nature and mission of the institution they attend, the people they meet at college, and the interactions of all these variables.

Section IV
Student Preparation for the Workplace

Among the publications summarized in this section are reports, studies, literature reviews and critical analyses on student preparation for the workplace. Nearly every document begins with a statement regarding the quality of the current workforce and continues by stressing the urgency of developing a highly skilled workforce, especially if the United States is to remain competitive on a global scale. Additionally, many of the authors doubt the capacity of schools to impart the skills and training that students will need to enter the workplace. Strategic partnerships are recommended frequently as a means of better preparing workers and increasing the nation's level of productivity. Systemic approaches are needed to help alleviate the "basic skills crisis."

Many of the authors outline steps for restructuring education and training activities, and establishing high quality programs. Reform agendas tend to include the following elements: skill standards; curricula, instructional approaches and assessments aligned with the standards; certification and licensure systems; accountability mechanisms; and employer incentives. As in previous sections, reports are listed in chronological order.

U.S. Department of Labor and U.S. Department of Education. *The Bottom Line: Basic Skills in the Workplace*. Washington, D.C.: U.S. Departments of Labor and Education, 1988.

Researchers who have conducted employer surveys point to the inadequate skill levels of the current workforce, and emphasize the urgency of restructuring education and training programs so that future workers will possess essential skills. A rapidly changing labor market demands a highly skilled, adaptable workforce that continuously pursues additional training opportunities. Future economic growth and competitiveness depend on the development of such a workforce. However, unlike workers of the past, most future workers will come from groups that traditionally have not received significant human resource investments and tend to be less skilled — specifically women, minorities and immigrants. Therefore, it is more critical than ever to attack the workforce literacy problem in the United States through a coordinated, concerted effort focused on developing the skills of all citizens.

To raise the quality of the workforce, better approaches for teaching basic skills are needed. The purpose of this publication is to provide ideas, guidelines and examples of innovative program designs for improving basic skills. It was developed for employers, educators and trainers who conduct basic skills development and workplace literacy programs.

The document contains summaries of findings from previous studies that explore the skill levels required of current and future workers, and identify the nature and extent of basic skills problems in the United States. The changing demographic composition of the population also is described, as well as the implications of emerging demographic patterns. Model approaches for teaching basic skills, including the use of a "functional context approach" to

simulate real work experiences, are shared. The authors also discuss program design characteristics and outline steps for conducting literacy audits and program evaluations.

Once the nature of an organization's basic skills problems has been identified, one or more of the following steps should be taken:

- Redesign tasks and develop new job-related materials so they reflect the skill levels possessed by employees.

- Create training programs for new employees that help them develop the skills needed to successfully enter their new positions.

- Develop bridge programs to close the gap between employee skills and job requirements.

Furthermore, the authors recommend that before basic skills programs are established, clear goals must be established, workers in need of assistance must be identified, anticipated results must be specified and available resources must be assessed. Resource assessment may include identifying potential partners such as local school districts, the state education agency, federal and state government funded service providers, postsecondary education institutions, community-based organizations, libraries and other non-profit agencies.

Finally, stressed in the publication is the need to act simultaneously and on multiple fronts to raise the skill levels of the American workforce. The recommended approach is to establish partnerships involving schools, government, community-based organizations, business and industry, and workers.

Barton, Paul E. and Irwin S. Kirsch. ***Workplace Competencies: The Need to Improve Literacy and Employment Readiness.*** **Washington, D.C.: Policy Perspectives Series, U.S. Department of Education, 1990.**

After more than a decade of education reform, ideas and programs abound for remedying the poor condition of public schooling. The result, however, often has been greater confusion for many policymakers. To address this issue, the Office of Educational Research and Improvement commissioned several papers on pressing public policy topics. This report focuses on the literacy needs of workers. Informational in nature, this report is designed to provide policymakers and educators with current accurate information to better inform their debates about workplace competencies, literacy and employment readiness.

The authors begin their analysis by referring to a 1986 Educational Testing Service report that profiles literacy levels of America's young adults. The study assessed students in three literacy areas: reading and interpreting prose; identifying and using information located in documents; and applying numerical information contained in printed materials. According to the results, few young adult high school graduates are capable of performing moderately complex tasks, and are inadequately prepared to enter the workforce.

The authors continue by exploring a decade of literature that describes the skills employers seek in their workers. They propose that in addition to prose, document and quantitative literacy, the list of workforce skills should include learning to learn; listening and oral communication; creative thinking and problem solving; interpersonal skills including negotiation and teamwork; personal and career development, including self-esteem, goal-setting and motivation; and organizational effectiveness and leadership.

After summarizing several reports that predict future workforce characteristics and necessary skills, the authors urge the country continue to raise literacy levels. Present literacy levels are too low to meet current employment needs and expectations. Demographic and education achievement studies show that minority populations with traditionally lower education attainment and literacy levels will be a growing proportion of new labor entrants. Thus, nationwide literacy levels will have to be improved considerably just to meet current needs.

The authors conclude with the following recommendations:

- Address inadequate literacy by improving information-processing skills.
- Expand measures of proficiency in literacy tasks beyond classroom reading, and distinguish between classroom reading proficiency and workplace literacy requirements.
- Recognize that changes need to occur immediately given corporate restructuring and declining education performances.
- Improve literacy skills in schools by using instruction approaches that simulate real-world experiences.
- Develop better evaluation tools by tracking employment readiness and literacy, developing literacy tasks from workplace materials and conducting occupational analyses.

Carnevale, Anthony P., Leila J. Gainer and Ann S. Meltzer. *Workplace Basics: The Essential Skills Employers Want.* San Francisco: Jossey-Bass Publishers, 1990.

Over the past decade, national attention has focused on developing a productive, high quality workforce that is capable of meeting current and future workplace needs and functions effectively in a global economy. First, however, it is critical that the skills employers seek in workers be defined clearly. Once essential skills have been established, workforce education and training programs should be restructured to develop workers who possess these skills.

The issue of what constitutes appropriate workforce development approaches prompted the American Society for Training and Development and the U.S. Department of Labor to undertake a national, three-year study. Study results indicate that along with the rudimentary skills of reading, writing and computation, there is a complete other set of skills that workers must perform effectively. Based upon the findings, the authors suggest that employers need employees who:

- Have some sense of the skills needed to perform well in the workplace (personal and career development)
- Can learn the particular skills of an available job (know how to learn)
- Can distinguish key points that make up customer concerns (listening) and convey an adequate response (oral communication skills)
- Can think on their feet (problem solving) and develop innovative solutions (creative thinking)
- Have pride in themselves and their potential to be successful (self-esteem)
- Have some sense of where the organization is headed and what they must to do make a contribution (organizational effectiveness)
- Know how to get things done (goal-setting and motivation)
- Can assume responsibility and motivate coworkers when necessary (leadership)
- Can get along well with customers, suppliers and coworkers (interpersonal and negotiation skills)
- Can work with others to achieve a goal (teamwork)

Also included within this book is an outline of how these skills affect job performance in a variety of occupations, and guidelines for implementing training programs that develop individuals with these skills. The authors conclude their work by discussing the following procedural steps for establishing effective education and training programs: identifying job changes or problems that may require basic workplace skills training; building management and union support for skills training programs in workplace basics; presenting strategy and action plans to management and unions for approval; performing a task analysis for a selected job; designing and developing a curriculum; and implementing, evaluating and monitoring the training program.

Commission on the Skills of the American Workforce. *America's Choice: High Skills or Low Wages*. Rochester, NY: National Center on Education and the Economy, 1990.

Unlike other industrialized countries, the United States has not established a national system of high academic standards for non-college bound youth or a process for assessing achievement against such standards. Additionally, the U.S. has one of the worst school-to-work transition systems of any advanced industrial nation. Unless students know adults who can help them obtain jobs, they often are left to struggle on their own.

To explore the issues surrounding the implementation of high standards and effective school-to-work transition systems, the Commission on the Skills of the American Workforce

conducted a one-year study designed to examine the organization of the American workplace and workforce in comparison to those of other industrialized countries (Denmark, Germany, Ireland, Japan, Sweden and Singapore).

Commission members interviewed employers in American companies and found that most do not expect job-related skill requirements to change significantly — only 5% of employers were concerned about a skills shortage. The reason cited for no skills shortage was the use of turn-of-the-century work organization methods.

In the foreign nations studied, however, virtually all students reach a high education standard. These countries provide "professionalized" education to non-college bound youth to prepare them to enter trades and ease their school-to-work transitions. They operate comprehensive labor market systems which combine training, labor market information, job search assistance and income maintenance for the unemployed. They support company-based training through general revenue or payroll tax-based financing schemes. And, perhaps most importantly, national consensus exists on the need to have high productivity forms of work organization and building high wage economies.

To establish a new approach to work and education in the United States, the Commission provides the following recommendations:

- A new education performance standard should be set for all students, to be met by age 16. This standard should be established nationally and benchmarked to the highest in the world.

- A system of employment and training boards should be established by federal and state governments, together with local leadership, to organize and oversee the proposed school-to-work transition programs and training systems.

- States should assume responsibility for ensuring that virtually all students achieve "Certificates of Initial Mastery." Through local employment and training boards, states, with federal assistance, should create and fund alternative learning environments for those who cannot attain the initial mastery certificate.

- A comprehensive system of technical and professional certificates and associates degrees should be created for the majority of students and adult workers who do not pursue a bachelor's degree.

- All employers should be given incentives and assistance to invest in the future education and training of their workers and to pursue high productivity forms of work organization.

The Commission concludes its report by stating that the nation has an important choice to make: whether it will become a nation of low wages or one that values and rewards high skills. The choice is between the status quo and demonstrating high standards; developing a system of better pay and better jobs; educating school dropouts; training skilled workers and providing companies incentives to employ them in high performance work organizations; and creating a unified system that addresses itself to a majority of workers.

ETS Policy Information Center. *From School to Work*. Princeton: Educational Testing Service, 1990.

For a highly advanced industrialized nation, the United States has one of the poorest school-to-work transition systems in the world. Although a great many high school youth enter the workforce directly following graduation rather than attending college, they receive little assistance in making this transition. This project was designed to explore the plight of the "forgotten half" — youth who do not continue their formal education following high school graduation. More specifically, this report covers five important aspects of the transition from school to work:

- The school-to-work transition system as it begins in high school
- The differences between classroom skills and workplace requirements
- The information processing skills that high school graduates possess
- Efforts to integrate academic and vocational education
- Prospects for better linking school and work

To acquire a better understanding of these aspects, ETS staff analyzed program information and data collected by the federal government and other national organizations. Some of the findings synthesized from their research include:

- The United States spends more on students who continue their education than it does on smoothing school-to-work transitions for high school graduates.
- Non-college bound youth face a long and difficult road to meaningful employment.
- The economic position of high school graduates continues to decline.
- Although more high school students work part time, this does not appear to impair academic performance, at least until work time exceeds 20 hours per week.
- Students' education and work experiences are disconnected.
- Work skills and schooling objectives are seldom communicated in a similar fashion.
- Large proportions of high school graduates are unable to perform moderately complex information processing tasks.
- Although hostility often characterizes the relationship between academic and vocational educators, several communities are attempting to better integrate academic and vocational instruction.

- For the most part, students themselves are left to link school and work. Jobs for Americas' Graduates is the only national initiative to assist high school students entering the workplace. Additional efforts include those of the Boston Compact and the National Alliance of Business.

In summary, this report contains a description of the issues surrounding school-to-work transition, a discussion of the pertinent data, strategies for addressing the issues and illustrations of promising approaches. Renewed interest is being expressed in this issue and accurate information is critical for informing emerging public policy debates. Furthermore, the report's authors stress the importance of developing a better transition system that takes into consideration the American value of having numerous options and avoids labels that limit opportunity. A collaborative partnership among government, business and public education will be needed to strengthen the connection between school and work.

American College Testing. *Work Keys: National System for Teaching and Assessing Employability Skills*. Iowa City, IA: American College Testing Program, 1991.

Declining productivity, an inadequate education system and the transition from a national to a global economy have prompted numerous calls to improve the preparation of entry-level workers and upgrade the skills of current workers. To drive a much needed reform of workforce preparation and development, ACT and the American Association of Community and Junior Colleges developed Work Keys — "a national system for teaching and assessing employability skills."

The system is a tool that can be used to enhance the ineffective relationship between learning and work by combining instructional strategies and assessments that are related to clearly defined work outcomes. It is designed to enrich individual skill development and facilitate transitions between learning and working environments. Thus, Work Keys is comprised of four associated components:

- A systemic job-profiling process based on skill requirements
- Various skill-assessment tools and measurement procedures
- Assessment recording and reporting formats
- Instructional materials and resources that encompass employability skills

The Work Keys system will greatly enhance workforce preparation by improving communication among employers, educators and learners. Employers will profile their jobs based upon the specific skills that employees need to competently perform the work. Educators will use the profiles to create curricula and instruction strategies designed to develop workers with the specific skills. And learners will better understand the linkages between education and work, which in turn may motivate them to develop the requisite skills and contribute to their success and satisfaction with the workplace.

In summary, Work Keys is designed to spark education reform and improve workforce preparation. This will be accomplished by identifying the skills necessary for workers to compete in a global marketplace and then promoting the use of innovative curricula and instruction approaches that emphasize and develop these skills in individuals.

Secretary's Commission on Achieving Necessary Skills. *What Work Requires of Schools: A Scans Report for America 2000.* Washington, D.C.: U.S. Department of Labor, 1991.

The Secretary's Commission on Achieving Necessary Skills was appointed by the Secretary of Labor to determine the skills young people need to succeed in the workplace. The Commission's fundamental purpose was to encourage a high performance economy characterized by high-skill, high-wage employment.

This report focuses on two areas: the skills needed for workplace success and acceptable skill proficiency levels. A high performance workplace requires workers who have a solid foundation in basic literacy and computational skills, in thinking skills necessary to put knowledge to work, and in personal qualities that make workers dedicated and trustworthy. In summary, competent workers in the high performance workplace need:

- Basic skills — reading, writing, arithmetic and mathematics, speaking and listening
- Thinking skills — the ability to learn, reason, think creatively, make decisions and solve problems
- Personal qualities — individual responsibility, self-esteem and self-management, sociability and integrity

In addition to a solid foundation, high performance workplaces require competencies:

- Resource management — the ability to allocate time, money, materials, space and staff
- Interpersonal skills — the capacity to work on teams, teach others, serve customers, lead, negotiate and work well with people from culturally diverse backgrounds
- Information acquisition and use — the ability to acquire and evaluate data, organize and maintain files, interpret and communicate, and use computers to process information
- System understanding — the competence to comprehend social, organizational, and technological systems; monitor and correct performance; and design or improve systems
- Technological skills — ability to select equipment and tools, apply technology to specific tasks, and maintain and troubleshoot equipment

Presently, this combination of foundation skills and workplace competencies is not taught in many schools or required for most diplomas. The Commission concluded that these

foundation skills and competencies should be taught in context, placing the learning objectives within the work environment.

Cappelli, Peter. "College and the Workplace: How Should We Assess Student Performance?" EQW Working Paper 9, Philadelphia: Trustees of the University of Pennsylvania, 1992.

Concerns regarding the utility of what students learn in college, the need for a strong national economy and the escalating costs of a college education have focused attention on the performance of college students. The author of this report begins by reviewing numerous studies which focus on the relationship between grades and job performance. For the most part, researchers concluded that either no relationship existed or that grades were poor predictors of work performance. Thus employers seldom use grades when making hiring decisions and students may have little incentive to make good grades.

Although various alternative assessments are being developed and implemented in secondary schools, limited experimentation is occurring at the postsecondary level. The author's thesis is that innovative assessment tools which measure college performance and predict job success are essential if the relationship between education and work is to be strengthened. Once reliable measures have been developed, employers will use them to make hiring decisions and students will then have an excellent incentive for performing at high levels during college.

The business community has a great deal of experience identifying workplace skills and evaluating potential employees to predict performance. Several selection procedures practiced by business and industry are relevant to postsecondary education. These include ability testing, biographical data and the use of work samples. The author examines each of these procedures and describes how to improve assessment of collegiate performance, specifically by expanding student transcripts.

Additionally, several job analysis systems — efforts to determine the work requirements of various occupations — are compared in this paper. The findings indicate that most entry-level jobs require the same general skills (e.g., interpersonal and communication skills, critical thinking, data and information processing, and mathematics).

The author concludes that changes may be made to existing curricula so that essential job skills are taught. The more critical issue, however, is that of assessing college performance. Several innovative alternative assessment systems are being implemented, but much progress could be made by simply revising the ways in which existing information is assembled and reported.

In summary, the development of job-relevant assessments is critical and will benefit both employers and students. Employers will be provided with accurate information about a student's work skills and this should decrease the costs associated with selection programs. Students will have incentives to achieve at high levels to improve their chances of securing gainful employment.

Kirsch, Irwin S., Ann Jungeblut and Anne Campbell. *Beyond the School Doors: The Literacy Needs of Job Seekers Served by the U.S. Department of Labor*. Princeton: U.S. Department of Labor, Employment and Training Administration, and Educational Testing Service, 1992.

A growing amount of literature supports the notion that workers lack the skills required to successfully perform their jobs. Policymakers, educators, business and industry leaders, and the media have all argued the issue of literacy, especially as it relates to workplace skills. Current debates tend to focus on the literacy levels of job seekers and the need to increase literacy. Improved education and training systems are critical for keeping pace with rapid social and economic changes. But are current education and occupational training systems adequately preparing individuals for work in a rapidly transforming world? Do workers possess the literacy skills necessary to succeed in the workplace?

To answer these questions, the U.S. Department of Labor contracted with the Educational Testing Service to determine the literacy skills of Job Training Partnership Act (JTPA) and Employment Service/Unemployment Insurance (ES/UI) program participants. These programs assist a large percentage of American job seekers (20 million) by promoting entry, re-entry and advancement for individuals seeking better jobs. Literacy proficiencies are described and compared in this report.

Individual literacy assessments were administered to 6,000 adults who were participating in one of the three training systems. Three types of information processing skills necessary for engaging in most current jobs were assessed: prose comprehension, document literacy and quantitative skills.

Survey results are summarized as follows:

- Approximately 75% to 90% of program participants with less than eight years of education and 65% to 70% of those with nine to 12 years of education but lacking a diploma scored in the lowest two levels of the five-level assessment.

- Some 40% to 45% of program participants function at the lowest literacy levels measured by the assessment.

- Program participants demonstrating higher levels of literacy skills tended to earn better wages, were employed more often and held higher-level jobs.

- Program participants believe they could improve their employment prospects if they acquired better reading, writing and mathematical abilities through additional training or education.

- Scores for African American and Hispanic participants tended to be lower than for non-minority participants.

The authors conclude that participants in these programs may face difficulties in workplaces that require complex literacy skills. They emphasize the need for greater commitment to upgrading literacy skills of displaced and disadvantaged workers, otherwise these workers will be denied access to the job market. Also of concern is the lack of outcome measures which are comparable across individuals and over time, and the inadequacy of current adult education and training programs. Furthermore, these data serve to increase public understanding of workforce literacy problems, inform policy debates, guide programmatic revisions and provide baseline information for longitudinal analyses and subpopulation comparisons.

Moore, Larry. *Improving Workforce Basic Skills: The Foundation for Quality*. White Plains, NY: Quality Resources, 1992.

The basic skills possessed by workers in the United States are at exceedingly low levels and threatens to weaken the nation's position in the emerging global economy. This "basic skills crisis" has warranted widespread concern. Numerous reports since *A Nation at Risk* have warned the public about the failing education system and epidemic of inadequate basic skills.

The author of this book believes that the education system is to blame for the skill deficiencies of students, and immediate action is critical because most adults lack meaningful high school credentials and dropout rates continue to escalate. The author documents the perils associated with an undereducated workforce; it is intended to assist small to mid-size companies (50 to 999 workers) with the design and implementation of training programs. "A rational, cost-effective solution to the problem of workforce low basic skills" also is outlined.

The author draws from his numerous and varied work experiences for the material contained in the book. In chapter one, he examines major reports on basic workforce skills and establishes the extent of the problem. Definitions of the term "basic skills" are discussed in the second chapter. The focus of chapter three is adult learning, including learning facilitators, barriers, facts and myths. Learning materials and methods are presented in the fourth chapter. In chapter five, the author outlines the five phases of the Instructional Systems Design (ISD) model: analyze, design, develop, implement and control. A model for assessing the learning climate of an organization is described in chapter six. In chapter seven, the author predicts the skills needed by the future workforce. Chapter eight contains suggestions for education rewards and discussions of their benefits. Strategies for private sector partnerships are outlined in chapter nine. The book concludes with recommendations for putting all of the various pieces together when addressing the problem of low basic skills.

Some of the conclusions/implications drawn from the book are as follows:

- Improvement at all levels of the education system is critical.
- Programs with clear goals, a singular purpose, and focused energy can raise skill levels and enhance quality and productivity while lowering costs.

- One goal of workforce training programs should be to develop and empower adaptable workers capable of negotiating rapid organizational, technological and societal changes.

- Training programs should focus on developing workers who possess teamwork, communication, problem-solving and decision-making skills.

- Continuous training and retraining are essential for development of the workforce.

National Center for Research in Vocational Education. *Education and Training for Work in the Fifty States: A Compendium of State Policies*. Macomb, IL: Western Illinois University, 1992.

Publicly supported education and training programs are funded predominantly by state governments. Consequently, state governments' roles in establishing program objectives and content are increasing. In addition to their own policies and practices, state governments must contend with federal legislation that continues to expand their role in administering federal programs. To effectively coordinate and manage these numerous efforts and funding streams, it is essential that policymakers understand the various programs — their intent, effectiveness and funding mechanisms — so they can assess the effectiveness of workforce training and education.

To acquire a better understanding of how each state organizes its workforce education and training programs, the Office of Vocational and Adult Education in the U.S. Department of Education awarded a study grant to the National Center for Research in Vocational Education, University of California-Berkeley. The purpose of the study was to construct a database which state leaders could use to conduct more in-depth analyses of certain elements of work-related education.

The product is a national database which contains information on five education and training programs: secondary vocational education, postsecondary vocational education, the Job Training Partnership Act (JTPA), welfare-to-work programs and state funded job training. Although the handbook contains state policies and practices characteristic of these programs, it does not contain design analyses or evaluations.

Information was gathered by conducting telephone interviews with the five program directors and key staff in every state. To determine the state's education policy agenda, additional interviews were conducted with either the governor's education policy advisor or legislative staff. Other government employees were interviewed to compile a picture of the state's economic situation.

Within each policy area researchers provide data by state and describe cross-state trends. The data illustrate the complexity and diversity of state systems, and demonstrate the critical role played by state governments in system maintenance and innovation. The researchers describe the types of institutions that deliver services, program goals and components, finance and

governance systems, and implementation and coordination strategies. Policymakers and program managers can use this information to evaluate their programs, develop accountability mechanisms, integrate curriculum, and establish collaborations among education and workforce training initiatives.

National Governors' Association. ***Enhancing Skills for a Competitive World: Report of the Action Team on Lifelong Learning.*** **Washington, D.C.: National Governors' Association, 1992.**

For the most part, state policymakers, educators and business leaders agree on the need for developing a highly skilled workforce as well as accessible education and training programs which constitute a lifelong learning continuum. This continuum includes early childhood programs, high quality instructional practices, school-to-college and school-to-work transition mechanisms, adult education and training programs, and opportunities for individuals to receive additional training and upgrade their skills. Because the development of such a system requires a significant investment of resources, many state leaders are attempting to reorganize existing services and programs, and realign funding sources to meet statewide priorities.

To address system design, funding and organizational issues, the National Governors' Association established an Action Team on Lifelong Learning comprised of leaders from states on the leading edge of system reform in both education and workforce development. Contained in this report are descriptions of reform efforts occurring in the states belonging to the action team. Driving these reforms is the realization that fragmented education and training systems typical in most states do not provide high quality, widely accessible services on a consistent basis, and subsequently, do not meet the needs of employers, individuals or state economies.

The initiatives described in this report are organized into four broad categories:

- Customer-driven initiatives characterized by consolidated and strengthened policymaking, and coordinated planning, budgeting and oversight for workforce development. State efforts described in this section include those found in Indiana, Iowa, Kentucky, Massachusetts, New Jersey, New York, Oregon, Pennsylvania and Wisconsin.

- Career development initiatives characterized by enhanced accountability mechanisms and expanded options for preparing young people for work and further education. Described are initiatives in Indiana, Iowa, Kentucky, Massachusetts, New Jersey, New York, Pennsylvania, Wisconsin and the Great Lakes region.

- Education initiatives designed to increase investments in and expand opportunities for adults seeking to upgrade their skills. Efforts discussed in this section include those being conducted in Iowa, Kentucky, New Jersey, Pennsylvania, South Carolina and Wisconsin.

- Higher education initiatives to increase access and improve accountability. Efforts in Indiana, Massachusetts, Missouri, South Carolina and Wisconsin are described in this section.

Taken collectively, several lessons about systemic change emerge from the experiences of the action team states:

- Reform should be guided by a clear, widely shared vision and set of agreed upon principles.

- Leadership and commitment are essential for developing a shared vision and decreasing resistance to change.

- Oversight responsibility should rest with a centralized authority.

- Local decisionmakers need the flexibility to decide how best to achieve results in their communities.

- Systemic change is a long and complicated process requiring advance planning, open communication, persistence and substantial system-wide investments.

Sheets, Robert. "Building a World-Class Front-Line Workforce: The Need for Occupational Skill Standards in State Workforce Preparation Programs." EQW Working Paper 6, Philadelphia: Trustees of the University of Pennsylvania, 1992.

Recent public policy debates center around the need of developing a workforce that exceeds quality and productivity levels established by other countries. To address this issue, comprehensive state workforce preparation systems are needed. Such systems must necessarily guide and coordinate all workforce training efforts. Perhaps a more pressing issue for state leaders, however, is upgrading the skills of the current adult workforce. To accomplish this task, state leaders will need to engage in the following activities: define the skills workers need to perform successfully on the job, establish strategies for training adult front-line workers, develop new approaches for expanding private sector investments in training and enhance the quality of vocational-technical programs.

The first essential step is the development of occupational skill standards. All major economic powers, except for the United States, have in place occupational skill standards. It is highly unlikely that a world-class workforce will be developed in the absence of such standards. The author of this paper argues for the creation of a national-state system of occupational skill standards which will allow business and industry to realize world-class levels of quality and productivity. Such a system is necessary for restructuring adult vocational education and job training programs.

The paper is divided into four sections: a discussion of why a system is necessary, processes for institutionalizing skill standards, methods for defining skill standards and recommendations for building a national system.

The author concludes his analysis by outlining a six-step process for developing a national system:

(1) Establish a national skill corporation.

(2) Develop a new system for classifying occupations.

(3) Develop a set of job duties and skill standards for each occupational category.

(4) Restructure credentialing systems based on the standards.

(5) Incorporate skill standards into the evaluation of workforce preparation programs.

(6) Establish a common accountability system/regulatory policies for public and private providers.

Ganzglass, Evelyn and Martin Simon. ***State Initiatives on Industry-Based Skill Standards and Credentials.*** **Washington, D.C.: National Governors' Association, 1993.**

Most state leaders acknowledge the importance of developing highly skilled workers and increasing economic competitiveness. The first step in accomplishing these important goals is the development of skill standards and credentials. Such standards now guide numerous education reform and workforce preparation activities. These various state and local experiences have informed the U.S. Departments of Education and Labor's initiative to develop a national system of industry-based skill standards and credentials.

Such an initiative requires a strong and active partnership among the federal and state governments and business. The federal government's role in this effort would be to ensure accountability through assessment and certification. Business and industry officials would take the lead in standard development. State governments would use the skill standards to redesign their education and workforce development policies and programs.

This report is part of a project conducted by the National Governors' Association and designed to inform the national initiative. It contains summaries of state activities to develop skill standards and credentials. Three data sources provide the information contained in this report: phone surveys conducted with officials representing 19 states (Arizona, Arkansas, California, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Maine, New Jersey, New York, Ohio, Oklahoma, Oregon, Pennsylvania, Texas, Vermont and Wisconsin); case studies of three states (Georgia, Pennsylvania and Texas); and a focus group discussion with state and national representatives.

According to the responses, the envisioned national system would serve the following purposes: provide a common language regarding essential workplace skills; improve education and training programs by linking curriculum, instruction and assessment; and promote skills that are portable across occupations and state lines.

The following issues emerged during the interviews and focus group discussions:

- Most current skill standard development efforts are characterized by fragmentation.
- The development of skill standards is often linked with education reform and workforce development efforts.
- For the most part, the goals of program improvement and competency-based curricula development have guided state efforts to develop skill standards.
- Because skill standard and credential development is both time-consuming and costly, state leaders face difficulty initiating such efforts on their own.
- Whereas the primary leader differed by state, business and industry always were viewed as essential partners.
- The development of new statewide assessment procedures is well under way.
- A statewide credentialing process did not exist in any of the surveyed states even though state leaders recognized the importance of portable skills.

It was concluded that strong support exists for the development of a single national system of skill standards and credentials. The new system should build on state efforts and experiences, and promote portable, competency-based credentials. It also should provide some flexibility for states and the private sector to determine the best use of the skill standards. Once skill standards are regarded as a way to rebuild troubled education and training systems, they will play a significant role in raising the skill levels of American workers and enhancing U.S. competitiveness.

Johnson, Amy W. and Anita A. Summers. "What Do We Know About How Schools Affect the Labor Market Performance of Their Students?" EQW Working Paper 15, Philadelphia: Trustees of the University of Pennsylvania, 1993.

Over the past 15 years, the themes of inadequate education preparation and poor economic competitiveness have become linked, although evidence is lacking to support a causal relation. In this paper, the authors explore existing evidence to determine how the public school experience affects a student's performance in the labor market. More specifically, the authors wanted to know what, if any, direct linkages could be found between what is learned in schools and labor market success. Such data would have several significant policy implications, especially regarding how education resources should be allocated at both local and state levels, as well as the federal government's role in delivering education services.

A thorough review of the empirical literature was conducted, and more than 200 studies were identified that link school quality and labor market performance. Using specific criteria, the authors selected 17 studies for further analysis. The following observations were made about the studies:

- Most of the labor market observations were made within one to two years of high school graduation.

- Not one of the studies included school organization measures as inputs, so the impact of district variations on labor market performance is unknown.

- It was impossible to identify the differences between students who directly entered the job market following high school from those who went to college.

- None of the studies were individually specific or sufficiently longitudinal in nature to allow for satisfactory controls in regard to life-cycle earning patterns.

Subsequently, it was difficult to draw many policy implications from the studies, but the authors did provide the following list of results:

- School year length, amount of teacher-student contact and various other school characteristics do not affect graduates' job experiences.

- Data from two studies indicate that better-educated teachers develop more effective workers.

- According to two studies, students who performed more effectively on the job attended larger schools.

- Data from four studies indicate a positive relationship between education expenditures and work earnings. Caution was urged, however, in interpreting this finding.

- The relationship between instruction expenditures and labor market performance needs further exploration. Data from several of the studies indicate that teacher salary had a positive effect on student labor market performance.

According to their analysis, little is known about the linkages between schooling and labor market performance. Suggestions are provided for conducting a well-designed empirical study that could guide educational practices designed to better prepare students for workforce entry.

Osterman, Paul and Maria Iannozzi. "Youth Apprenticeships and School-to-Work Transition: Current Knowledge and Legislative Strategy." EQW Working Paper 14, Philadelphia: Trustees of the University of Pennsylvania, 1993.

The issue of school-to-work transitions has become popular among policymakers and the media. As a growing consensus emerges that American youth lack the basic skills necessary to enter the workforce, policymakers will need better information on various youth employment issues such as why students fail to make work connections; what causes youth employment to be unstable and what this means; and what type of system will facilitate school-to-work transitions, including youth apprenticeship.

This paper is divided into two sections. Part I, "Youth Apprenticeships and School-to-Work Transition Policy," contains a summary of the current youth labor market; a discussion of the potential goals of apprenticeship programs (e.g., school reform, labor market development, and developing connections between schools and employers); an analysis of apprenticeship program principles and design strategies; and a summary of critical legislative issues.

Part II, "Youth Employment Policy Seminar Presentations," contains summaries of five presentations made during an EQW seminar held in March 1993. The following presentations were used to inform the analysis contained in Part I: "The Demand for Youth Labor," "The Payoff to Working While in School," "School-to-Work Transition," "School-Based Policies," and "Program for Out-of-School Youth."

The authors caution policymakers who "are gearing up to design the best 'kit' and to jump on the bandwagon called 'best practice' when discussing a national youth apprenticeship system" because little is known about such programs.

American College Testing. *Performing a National Job Analysis Study: Overview of Methodology and Procedures*. Iowa City, IA: American College Testing (ACT), 1994.

It is critical that all current and future workers possess the skills necessary to compete in a rapidly changing global economy — one in which workers will not only change positions frequently but entire occupations. What specific skills and competencies will workers need? To address this question, a partnership was established among the U.S. Departments of Labor and Education and the Office of Personnel Management to determine generalizable workplace skills, develop appropriate assessment measures, and subsequently facilitate job training and ease school-to-work transitions. This document contains a description of study methods and procedures.

The National Job Analysis Study furthers work begun by the Secretary's Commission on Achieving Necessary Skills (SCANS), a large-scale effort intended to identify cross-cutting occupational skills. This study was designed to develop "a taxonomy of workplace competencies and skills necessary for employee success across numerous jobs, particularly in high-performance workplaces." Once the taxonomy is created, then assessment tools will be developed to provide information about the skill levels of current workers as well as the skills required of future workers.

Standard survey methodology will be used to collect information from current workers representing numerous occupations. ACT staff will construct three surveys, interpret the survey data, and assign behaviors/skills to the taxonomy with assistance from an expert panel and outside consultants. The study is to be conducted in two phases. During the first phase, core behaviors common across several occupations will be identified by developing a survey and distributing it to 12,000 workers representing 6,000 organizations and 164 occupations across the United States. "Criticality ratings" for each behavior will be computed and the most important cross-cutting occupational behaviors determined.

During the second phase, core behaviors will be verified and analyzed in relation to those observed in high-performance organizations. Also to be determined is the relationship between core behaviors and job tenure, as well as skill proficiency levels. An additional two surveys will be constructed to acquire this information. A fresh sample of 6,000 workers representing 3,000 organizations will receive the second survey. Upper-level managers will receive an environmental survey designed to characterize high-performance organizations based upon specific criteria. Cluster analyses will be conducted to sort core behaviors, then a taxonomy will be developed and skill proficiency levels established. Next, an assessment blueprint will be derived from the taxonomy, and occupational profiles and assessment tools will be developed.

These data have several uses. For example, the occupational profiles will structure the development of training and education programs such that school-to-work and occupational transitions are conducted with greater ease. The overarching goal of this work is the development of a comprehensive lifelong workforce learning system.

Zemsky, Robert. "What Employers Want: Employer Perspectives on Youth, the Youth Labor Market, and Prospects for a National System of Youth Apprenticeships." EQW Working Paper 22, Philadelphia: Trustees of the University of Pennsylvania, 1994.

Workforce quality deserves and is receiving substantial national attention. Yet policymakers have been reluctant to propose a comprehensive national strategy that invests in the education quality of the American workforce. Instead, most efforts have focused on the coordination and consolidation of existing programs and funding streams, as well as providing minimal funding for state planning and experimentation.

Given the absence of a national strategy, the National Center on Educational Quality of the Workforce conducted several youth labor market studies and analyses throughout 1993. The purpose of the studies and analyses was to summarize knowledge about the youth labor market, and determine the feasibility of implementing a national youth apprenticeship system.

The overall conclusion drawn from these various efforts was that students are having difficulty making smooth transitions between school and the workplace: more time is required to secure a good job following graduation; schooling and work have become increasingly disconnected; and given the economic climate, employers are becoming more skeptical of policy initiatives focused on worker education, training and placement. Skeptical employer attitudes were revealed during focus group sessions held by the Center in eight communities — Atlanta; Cleveland; Eugene, Oregon; Indianapolis; Ithica, New York; Phoenix; Pittsburgh; and Portland, Oregon. The following insights emerged during the employer focus group discussions:

- Improving the skills of young workers is not an immediate concern because of the surplus of experienced workers.

- Employers view youth as being unreliable, unqualified and undesirable employees.

- Businesses tend to look to college students and graduates when hiring; rarely are high school graduates considered.

- When asked about participating in youth apprenticeship programs, employers' primary concern was candidate screening. Employers placed little faith in school personnel to assign qualified students.

These insights, however, were at odds with a parallel survey of employers who participated in youth apprenticeship or similar programs. These employers were pleased with students, benefitted from the program and would participate again provided the opportunity.

Thus, strategies for increasing employer participation are needed. The following recommendations are offered for involving business and industry officials in the development of a national system or strategy:

- Clearly define the issue — the need for more and better jobs for youth.

- Increase the amount of national attention given to the issue of youth employment.

- Propose more flexible options for creating youth employment opportunities.

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